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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/929,359	08/15/2001	Tomaru Ogawa	50195-267	8872

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EXAMINER
DOVE, TRACY MAE

ART UNIT	PAPER NUMBER
1745	

DATE MAILED: 05/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/929,359	Applicant(s) OGAWA ET AL.	
	Examin r Tracy Dove	Art Unit 1745	

-- The MAILING DATE of this communication appears on the cover sheet with th correspond nc address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 August 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *2* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

The information disclosure statement (IDS) submitted on 8/15/01 has been considered by the examiner.

Claim Objections

Claims 15-18 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The claims recite a first formula, which is broadened by a further recited second formula. Only when δ is zero in the second formula is the first formula obtained. Thus, the second recited formula is broader in scope than the first recited formula. Claims 15, 16, 17 and 18 do not further limit claims 3 and 4.

Claims 11-14 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The composition variation ranges of claim 11-14 broaden the scope of claim 3 and 4.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 3-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 3 and 4 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: the claims do not define "a", "b", "c" or "d". Furthermore, if "a" is 1 and "b" is 6 then x does not meet the requirements of claims 1 and 2, from which claims 3 and 4 depend from, respectively.

Claims 3 and 4 each recite "with the Li-deficient quantity x and the M' substituting quantity y being regularly adjusted", which renders the claim indefinite. It is unclear how the quantities are "regularly adjusted".

In claims 5 and 6, "wherein the M' is at least one of selected from 3d-transition metals" is grammatically incorrect.

Claims 7 and 8 contain improper Markush Group language. It is suggested the claims be amended to recite "wherein the M' is at least one of iron (Fe) or nickel (Ni)".

Claims 11-14 recite "a composition variation range", which renders the claims indefinite. It is unclear what the formulas of claims 3 and 4 encompass if the composition of the formulas is varied according to claims 11-14.

Claims 17 and 18 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: the claims do not define "e" or "f".

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-8, 11-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Igawa et al., JP 10-241691.

Igawa teaches a secondary battery having a positive active material represented by the general formula $LiMeO_2$ wherein Me is at least one of Mn, Co, Ni or Fe. See Abstract. Tables 5 and 6 disclose specific positive active materials wherein Me is manganese or a metal of two or more kinds containing manganese as a main component (note $0<W<1.2$, see pages 4-5, paragraph 0030-0032).

Note a partial machine translation of the above Japanese reference has been provided.

The positive active material may be represented by the general formula $Li_{0.5}MeO_2$ or $Li_{0.2}MeO_2$ (page 2, paragraph 0015). At least the first two positive active materials in each of Table 5 and Table 6 show at least one of Fe or Ni represents part of Me. The secondary battery comprises a negative electrode containing a carbon material (page 6, paragraph 0043) and a gel electrolyte (page 6, paragraph 0042). See the Examples regarding claim 19.

Thus the claims are anticipated.

> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Nakano et al., US 6,306,542 B1.

Nakano teaches a lithium manganese composite oxide for a lithium secondary battery cathode active material represented by a composition formula $Li_{1-x}A_xMnO_2$ wherein A is an alkali metal except for Li and $0<x<1$. See abstract. The Mn site may be partially replaced by another metallic atom such as Ni, Co, Fe, Cr, Cu or Al. The layered lithium manganese oxide may be represented by the formula $Li_{1-x}A_xMnO_{2-\delta}$ (col. 5, lines 22-44). The negative electrode comprises a carbon material (col. 6, lines 27-31). See the Examples regarding claim 19.

Thus the claims are anticipated.

Claims 1-16, 19 and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Dahn et al., US 6,168,887 B1.

Dahn teaches a rechargeable battery comprising a $Li_xMn_{0.82}Co_{0.18}O_2$ positive active material. See Abstract. Dahn teaches it has been shown that heavy chromium doping stabilizes the layered structure of a positive active material and has reported that thermodynamically stable materials such as $LiMn_{1-x}Cr_{x-y}Ni_yO_2$ are known (col. 6, lines 50-55). Dahn teaches the positive active material is represented by the general formula $Li_x(Mn_{1-y}M_y)O_{2+z}$ wherein M may be a 3d transition metal such as Ni, Co, Fe or Cr (col. 3, lines 25-45). Note col. 5, lines 56-67. See the Examples regarding claim 19.

Thus the claims are anticipated.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Igawa et al., JP 10-241691 in view of Dahn et al., US 6,168,887 B1.

Igawa teaches a secondary battery having a positive active material represented by the general formula $LiMeO_2$ wherein Me is at least one of Mn, Co, Ni or Fe. See Abstract. Tables 5 and 6 disclose specific positive active materials wherein Me is manganese or a metal of two or more kinds containing manganese as a main component (note $0<W<1.2$, see pages 4-5, paragraph 0030-0032).

Note a partial machine translation of the above Japanese reference has been provided.

The positive active material may be represented by the general formula $Li_{0.5}MeO_2$ or $Li_{0.2}MeO_2$ (page 2, paragraph 0015). At least the first two positive active materials in each of Table 5 and Table 6 show at least one of Fe or Ni represents part of Me. The secondary battery comprises a negative electrode containing a carbon material (page 6, paragraph 0043) and a gel electrolyte (page 6, paragraph 0042). See the Examples regarding claim 19.

Igawa does not explicitly teach that Me may contain Cr.

However, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because Dahn teaches it has been shown that heavy

chromium doping stabilizes the layered structure of a positive active material and has reported that thermodynamically stable materials such as $LiMn_{1-x}Cr_{x-y}Ni_yO_2$ are known (col. 6, lines 50-55). One of skill would be motivated to add Cr to the positive active material of Igawa because the addition of chromium would stabilize the layered structure. Both Igawa and Dahn disclose lithium manganese nickel oxide materials for positive electrodes.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is (703) 308-8821. The Examiner may normally be reached Monday-Thursday (9:00 AM-7:30 PM). My supervisor is Pat Ryan, who can be reached at (703) 308-2383. The Art Unit receptionist can be reached at (703) 308-0661 and the official fax numbers are 703-872-9310 (after non-final) and 703-872-9311 (after final).

May 5, 2003

Patrick Ryan
Supervisory Patent Examiner
Technology Center 1700